

CLAIMS

What is claimed is:

1. An electrical contact stud for fastening an electrical earth contact, the stud comprising:

a shank having an external thread;

a contact flange adjoining the shank, having a contact face facing the shank; and

a cap nut made of a plastic material;

wherein the shank having the external thread is operable to screw down the cap nut with a torque of at least 4 Nm.

2. The electrical contact stud of Claim 1, wherein the shank having the external thread is operable to screw down the cap nut with a torque of at least 6 Nm.

3. The electrical contact stud of Claim 1, wherein the shank having the external thread is operable to screw down the cap nut with a torque of approximately 8 Nm.

4. The electrical contact stud according to claim 1, wherein a ratio of an inclination of the external thread to a diameter of the shank is at least 1:5.

5. The electrical contact stud according to claim 1, wherein a ratio of an inclination of the external thread to a diameter of the shank is at least 1:4.

6. The electrical contact stud according to claim 1, wherein a ratio of an inclination of the external thread to a diameter of the shank is approximately 1:3.

7. The electrical contact stud according to claim 1, wherein a ratio of a thickness of the contact flange to a diameter of the shank is at least 1:2.

8. The electrical contact stud according to claim 1, wherein a ratio of a thickness of the contact flange to a diameter of the shank is approximately 1:1.5.

9. The electrical contact stud according to claim 1, wherein a ratio of a thickness of the contact flange to a diameter of the shank is approximately 1:1.

10. The electrical contact stud according to claim 1, wherein the contact flange comprises a welding portion having a blunt conical projection, the welding portion positionable on a contact flange face opposite the contact face.

11. The electrical contact stud according to claim 1, wherein the contact flange of the stud comprises an axial extension forming a contact face for introduction of a welding current.

12. The electrical contact stud according to claim 1, wherein the contact flange comprises a tool engagement region.

13. The electrical contact stud according to claim 1, wherein the shank comprises a bezel on an open end.

14. The electrical contact stud according to claim 1, wherein the contact stud comprises a substantially corrosion-proof and electrically contact-conveying coating.

15. The electrical contact stud according to claim 14, wherein the coating comprises a tin-zinc alloy.

16. A cap nut for fastening an electrical earth contact, the cap nut comprising:

a plastic cap; and

a front end of the cap including a thread orifice containing an internal thread and a sealing flange;

wherein the internal thread of the cap nut is tightenable on a corresponding external thread of the electrical earth contact until the sealing flange engages against a contact face of the electrical earth contact with a torque of at least 4 Nm.

17. The cap nut of Claim 16, wherein the internal thread of the cap nut is tightenable on the corresponding external thread, against the contact face, with a torque of approximately 6 Nm.

18. The cap nut of Claim 16, wherein the internal thread of the cap nut is tightenable on the corresponding external thread, against the contact face, with a torque of approximately 8 Nm.

19. The cap nut according to claim 16, wherein a ratio of an inclination of the internal thread to a diameter of the thread orifice is at least 1:5.

20. The cap nut according to claim 16, wherein a ratio of an inclination of the internal thread to a diameter of the thread orifice is at least 1:4.

21. The cap nut according to claim 16, wherein a ratio of an inclination of the internal thread to a diameter of the thread orifice is approximately 1:3.

22. The cap nut according to claim 16, wherein the cap nut comprises a conductive plastic material.

23. The cap nut according to claim 22, comprising an enclosed metal element creating the conductive plastic material.

24. The cap nut according to claim 23, wherein the enclosed metal element comprises metal filaments.

25. The cap nut according to claim 16, wherein the plastic material comprises a resistance to mechanical strain, the plastic material including a polyamide reinforceable by a plurality of glass fibers.

26. The cap nut according to claim 25, wherein the plastic material comprises at least 10% glass fibers.

27. The cap nut according to claim 25, wherein the plastic material comprises at least 20% glass fibers.

28. The cap nut according to claim 25, wherein the plastic material comprises approximately 35% glass fibers.

29. The cap nut according to claim 16, wherein the cap comprises a centering point.

30. The cap nut according to claim 16, wherein the sealing flange comprises a paint seal.

31. The cap nut according to claim 16, wherein a diameter of the sealing flange is one of equivalent to and less than a diameter of the contact face.

32. The cap nut according to claim 16, wherein the front end comprises one of a concave surface and an obtuse-angled, conical recess, operably forming a front end outside sealing lip.

33. The cap nut according to claim 16, wherein the internal thread comprises an internal thread dimension smaller than a corresponding external thread dimension.

34. The cap nut according to claim 16, wherein the cap comprises a tool engagement region.

35. An electrical contact system, comprising:
an automotive vehicle electrical ground;
an electrical contact stud of the automotive vehicle electrical ground, the contact stud having a shank;
the shank including an external thread;
a contact flange adjoining the shank, the contact flange having a contact face facing the shank; and
a cap nut having a front end, the front end including a thread orifice containing an internal thread;
wherein the internal thread of the cap nut is tightenable on the external thread against the contact face using a torque of at least 4 Nm.

36. The electrical contact system of Claim 35, wherein the torque is approximately 6 Nm.

37. The electrical contact system of Claim 35, wherein the torque is approximately 8 Nm.

38. The electrical contact system of claim 35, wherein an inclination of the internal thread is different from an inclination of the external thread to produce a self-locking nut.

39. The electrical contact system of claim 35, wherein a diameter of the shank is at least 2% larger than a diameter of the thread orifice.

40. The electrical contact system of claim 35, wherein a diameter of the shank is at least 6% larger than a diameter of the thread orifice.

41. The electrical contact system of claim 35, wherein a diameter of the shank is approximately 8% larger than a diameter of the thread orifice.

42. An electrical contact welding stud, comprising:
a threaded shank having a first end and a second end;
a contact flange joined to the first end of the threaded shank; the
contact flange including a contact face adjacent the first end of the threaded
shank and an opposed tool engagement region; and
an integral welding portion joined to the contact flange adjacent the
tool engagement region.

43. The welding stud of Claim 42, wherein the welding portion
comprises a substantially conical projection oppositely positioned from the
threaded shank second end.

44. The welding stud of Claim 42, wherein the second end of the
threaded shank comprises a bezel.

45. A cap nut, comprising:
 - a first end extending to a centering point;
 - a second end operably forming a sealing flange;
 - a tool engagement region positioned between the first end and the second end, the tool engagement region having a hexagonal shape; and
 - a threaded orifice coaxially aligned with the centering point, the threaded orifice opening through the second end, the threaded orifice having an internal thread.
46. The cap nut of Claim 45, comprising a plastic material.
47. The cap nut of Claim 45, comprising:
 - a sealing lip peripherally formed in the sealing flange; and
 - an obtuse-angled conical recess operably forming the sealing lip.
48. The cap nut of Claim 45, wherein the cap nut comprises a conductive plastic material.

49. A method of fastening an electrical contact to a workpiece to be painted using at least an electrical contact stud and a cap nut, the method comprising:

- (a) rotating the cap nut to tighten the cap nut on the contact stud with a torque of at least 1 Nm;
- (b) fastening the contact stud to the workpiece;
- (c) applying paint to the workpiece;
- (d) loosening the cap nut from the contact stud;
- (e) intermediately placing an electrical contact shoe between a contact flange of the cap nut and the workpiece; and
- (f) pressing the electrical contact shoe by tightening the cap nut with a torque of greater than 4 Nm.

50. The method of Claim 49, comprising torquing the cap nut with a maximum torque of 4 Nm.

51. The method of Claim 49, comprising torquing the cap nut with a torque of approximately 3 Nm.

52. The method of Claim 49, comprising pressing the electrical contact shoe by tightening the cap nut with a torque of greater than 6 Nm.

53. The method of Claim 49, comprising pressing the electrical contact shoe by tightening the cap nut with a torque of approximately 8 Nm.

54. The method according to claim 49, comprising creating the cap nut of a plastic material.

55. The method according to claim 50, comprising deforming the cap nut one of elastically and plastically during the torquing step.